

**REMARKS**

**I. Introduction**

In response to the Office Action dated August 9, 2006, Applicants have amended claim 1 to incorporate the limitations of claim 4, to overcome the § 112 rejections, and to further clarify the present invention. In addition, claims 8-10 and 13-16 have been amended so as not to depend on the withdrawn claims. Claim 4 has been cancelled, without prejudice. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

**II. The Objection of Claim 6 Under 37 CFR 1.75(c)**

Claim 6 was rejected under 37 CFR 1.75(c) as being of improper dependent format for failing to further limit the subject matter of a previous claim. It is alleged that claim 6 does not further limit claim 1 because the limitation “agglomerate has been disaggregated” will result in only primary particles being present, whereas claim 1, on which claim 6 depends, recites both primary particles and agglomerate of primary particles.

Applicants respectfully submit that claim 6 does indeed further limit claim 1. Claim 6 refers to disaggregation, that is, some agglomerate particles of the primary particles become disaggregated. However, the process of disaggregation is not intended to transform all conductive agglomerates of primary particles back into primary particles. Claim 6 is intended to modify the ratio of agglomerated primary particles and primary particles so that the specified ratio is met, as indicated in the specification and claims (see, page 15, lines 20-24 of the specification). Accordingly, as all agglomerated primary particles are not transformed into

primary particles, claim 6 still allows for the presence of agglomerated primary particles, and therefore is not broader than claim 1. As such, Applicants respectfully request that objection of claim 6 under 37 CFR 1.75(c) be withdrawn.

**III. The Rejection Of Claims 1, 4, 8-9 And 12-13 Under 35 U.S.C. § 102**

Claims 1, 4, 8-9 and 12-13 were rejected under 35 U.S.C. § 102(b) as being anticipated by Durand et al. (U.S. 5,180,523). Applicants respectfully submit that Durand et al. fails to anticipate the pending claims for at least the following reasons.

With regard to the present invention, amended claim 1 recites a conductive paste comprising: conductive particles, primary particles and agglomerate of primary particles of which agglomeration degree (agglomeration degree= average diameter of agglomerate particles / average diameter of primary particles) is 1.05 to 3.90, wherein the average diameter of primary particles is 0.5 to 20  $\mu\text{m}$ , the average diameter of agglomerate particles is 0.5 to 20  $\mu\text{m}$ , the specific surface area is 0.07 to 1.7  $\text{m}^2/\text{g}$ , the content of the conductive particles ranges from 30 to 70 vol %, and the content of the binder ranges from 70 to 30 vol %.

One feature of the present invention is that a conductive paste has a degree of agglomeration in the range of 1.05 to 3.90. In this claimed range, the two characteristics of conductive resistance of a conductive paste and the charging property of a conductive paste in a via hole are compatible. As is known in the art, with this type of conductive paste, the magnitude of conductive resistance diminishes as the proportion of conductive particles in the paste increases. As a result, a better electrical connection can be made while using the paste in a via hole. However, as the proportion of conductive particles in a conductive paste increases, the viscosity of the paste increases and the charging properties of the paste diminish. Thus, the two

characteristics contradict one another in this respect and a specific window of ranges for a degree of agglomeration must be used for via hole filling.

In contrast to the present invention, Durand is directed to a conductive paste that is applied via a screen-printing technique. As such, the properties relating to the charging property of a conductive paste in a via hole are not disclosed in Durand. Accordingly, Applicants submit that Durand fails to teach or suggest claim 1 of the present invention.

Anticipation under 35 U.S.C. § 102 requires that each and every element of the claim be disclosed, either expressly or inherently in a prior art reference, *Akzo N.V. v. U.S. Int'l Trade Commission*, 808 F.2d 1471 (Fed. Cir. 1986), and Durand et al. does not disclose a conductive paste comprising: conductive particles, primary particles and agglomerate of primary particles of which agglomeration degree (agglomeration degree= average diameter of agglomerate particles / average diameter of primary particles) is 1.05 to 3.90, wherein the average diameter of primary particles is 0.5 to 20  $\mu\text{m}$ , the average diameter of agglomerate particles is 0.5 to 20  $\mu\text{m}$ , the specific surface area is 0.07 to 1.7  $\text{m}^2/\text{g}$ , the content of the conductive particles ranges from 30 to 70 vol %, and the content of the binder ranges from 70 to 30 vol %. Therefore, as it is apparent from the foregoing that Durand fails to anticipate amended claim 1 or any dependent claims thereon, Applicants respectfully request that the § 102 rejection be traversed.

### **III. The Rejection Of Claims 1 and 5-16 Under 35 U.S.C. § 103**

Claims 1 and 5-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Omoya et al. (USP No. 6,139,777). Applicants respectfully traverse this rejection of the pending claims for at least the following reasons.

As shown above, amended claim 1 of the present invention recites a conductive paste comprising conductive particles comprising primary particles and agglomerate of primary particles. Further, it was noted that Omoya fails to disclose an agglomerate of primary particles. However, it is alleged that because the prior art teaches making the conductive paste by mixing the component in a three roll mill, wherein the composition, components and process of making the composition are *similar* to the present invention, the present invention is obvious.

This allegation is incorrect. As previously argued in the May 24, 2006 response, the Omoya reference discusses only one particle diameter for conductive particles, which can be seen in Tables 1-3, 6, 8, 9, 11 and 12 of Omoya. There appears to be no mention in the Tables or anywhere in Omoya of two ranges of particle size. Nor is there any teaching or suggestion of agglomerations of primary particles. In contrast, the present invention discloses two ranges of particle sizes, relating to primary particles and agglomerations of primary particles (see, Table 2, page 28 of the specification). Thus, Omoya does not disclose an agglomerate of a larger particle size. The Examiner's allegation that the formation of agglomerates would be obvious is rendered invalid by the data set forth in the Omoya reference which shows no evidence that a larger agglomerate is present in the conductive paste.

Thus, Omoya does not disclose a conductive paste comprising conductive particles comprising primary particles and agglomerate of primary particles. Therefore, as it is clear that Omoya fails to teach or suggest all the claim limitations of the present invention, Omoya fails to render obvious, claim 1, or any claim dependent thereon. Accordingly, Applicants respectfully request that the § 103 rejection of claim 1 be withdrawn.

**IV. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable**

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

**V. Conclusion**

Having responded to all open issues set forth in the Office Action, it is respectfully submitted that all claims are in condition for allowance.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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**Date: February 9, 2007**